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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/936,065 | 09/05/2001 | Wolfgang Demmer | 3568.070 | 9690 |

7590

09/26/2003

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| EXAMINER |
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MENON, KRISHNAN S

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| ART UNIT | PAPER NUMBER |
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1723

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 09/936,065 | Applicant(s) DEMMER ET AL. | |
| | Examiner Krishnan S Menon | Art Unit 1723 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 11 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohnishi et al (US 5,244,578).

Claim 1: Ohnishi teaches a device for the separation of particles and at least one target substance from a particle-laden liquid feed comprising: (a) a housing having a liquid feed inlet and a permeate outlet (fig 5,6); and (b) at least two adjacent porous adsorption membrane layers (figures; col 1 line63-col 2 line 5) sealed fluid-tight in their peripheries and spaced apart from each other (spacer 77 fig 6; col 5 lines 51-67) and having at least one aperture in each layer (12,18,19: see fig 2-4, col 7 lines 54-68), with each aperture sized so as to permit the passage of particles present in a liquid feed containing at least one target substance.

Claim 2: The device of claim 1 wherein said membrane layers carry at least one group capable of binding at least one of said at least one target substance and selected from the group consisting of a functional group, a ligand and an ion exchange site (col 5 lines 1-22).

Claim 3: The device of claim 1 including at least one spacer between said at least two adjacent membrane k layers (spacer 77 in figure 6).

Claim 4: The device of claim 3 wherein said adjacent membrane layers are substantially parallel to each other (see figures).

Art Unit: 1723

Claim 5: The device of claim 4 wherein said adjacent membrane layers are separated from each other by a distance of from about 0.1 to 5 mm (col 5 lines 51-67)

Claim 6: The device of claim 5 wherein said distance is from about 0.2 to about 1.0 mm (col 5 lines 51-67).

Claim 7: The device of claim 3 wherein said at least one spacer comprises a material selected from the group consisting of a web, a mesh, a woven material and a matting (see 67 and 77, fig 6; col 9 lines 5-10; col 7 lines 58-65).

Claim 8: The device of claim 1 wherein said at least one aperture in said at least two adjacent membrane layers are offset from each other (see fig 3-4: holes in the membrane packs are off-set with respect to feed and permeate: col 8 lines 10-47).

Claim 11: The device of claim 1 wherein the shape of said at least one aperture is selected from a slot and a circle (circle – fig 3,4).

Claim 16: The device of claim 1 wherein said membrane layers have a pore diameter ranging from about 0.1 to about 10 micron (col 5 lines 45-50).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 9,10,12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi (578).

Art Unit: 1723

Ohnishi teaches all the limitations of claim 1. Instant claims add further limitations on the aperture dimensions as follows:

Claim 9: The device of claim 1 wherein said at least one aperture takes up an area of up to about 20% of the surface area of said at least two membrane layers.

Claim 10: The device of claim 9 wherein said area is from about 2 to about 4%.

Claim 12: The device of claim 11 wherein said at least one aperture is in the shape of a circle and its diameter is from about 0.01 to about 20 mm.

Claim 13: The device of claim 12 wherein said diameter is from about 0.5 to about 2 mm.

Ohnishi does not teach the specifics of the dimensions of the apertures, but it would be obvious to one of ordinary skill in the art at the time of invention that the dimensions could be obtained by proper optimization of design [Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955).]

2. Claims 14, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi (578) in view of Le et al (US 4,895,806)

Ohnishi teaches all the limitations of claim 1. Claims 14-17 have limitations that Ohnishi does not teach:

Claim 14: The device of claim 1 wherein said membrane layers are spiral wound.

Claim 15: The device of claim 14 wherein said membrane layers are enclosed within a module.

Art Unit: 1723

Claim 17: The device of claim 16 wherein said pore diameter is from about 3 to about 5 micron.

Le teaches spiral wound and modular construction (fig 3, 4) and pore sizes in the range as in claim 17 (col 2 lines 40-41). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Le in the teaching of Ohnishi for chromatographic devices as taught by Le (Le col 2 lines 23-46).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon
Patent Examiner


W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700